

COUNTRY Poland

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SUBJECT Inland Waterway: The Oder River

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1. Drainage area: 45,700 square mile.
2. Precipitation and run-off within drainage area: from 36 inches per year in upper basin; to 16 inches per year in lower basin. Run-off varies from 25% to 50%.
3. Channel alignment: Tortuous
4. a) Gradient:
On the upper course between Kozle and Ransern - 1.83 feet per mile.
On the lower course between Ransern and Stettin - 1.23 feet per mile.
- b) Current:
From 1.2 to 2 miles per hour at low water, about 5 miles per hour at high water.
- c) Discharge:
The rate of flow varies at low water level from 280 to 350 cubic feet.
" " " " " " " " " " 450 " 5,290 " "
" " " " " " " " " " 70,000 " 84,000 " "
- d) Width:
Regulation width - 200 feet in the upper stretch (except canalized section from Kozle to Ransern) and 500 feet in the lower stretch.
- e) Depth:
On the upper canalized stretch - 5 feet at low water and 7.5 feet at medium water; on the lower stretch from Breslau - less than 4.5 feet at low water.

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However, on passages (transit points) the depth reduces to 2 feet at low water level.

5. Turbidity: Rather small.

6. Seasonal variations of flows:

- a) High water always due to melting snow in spring, and occasionally in summer due to heavy rainfall.
For instance, the volume of flood water amounted to 56,000 million cubic feet in 1930, which corresponds to 30% of the total yearly discharge for that year or 55% in a dry year.
- b) Low water - occurs mostly in summer or fall.

7. Tidal effects: very little and up to Stettin.

8. Bed of streams: fine sand and gravel.

9. Banks:

Regulation fascine works and some portions of the groins covered with stone revetments placed directly on gravel or small broken stones and making 1:10 slopes towards the river.

10. Control works:

A) In the upper basin:

- a) Storage reservoir at Turawa on the river Mala Panew. The earth dam is 20,000 feet in length and is 75 feet in height. The storage reservoir has a total capacity of 3,600 million cubic feet, of which 3,100 million cubic feet are available for improvement of navigation on the river Oder.
- b) Storage reservoir at Otmuchau (Odmuchow) on the river Nissa. The earth dam has a length of 21,300 feet and a height of 56 feet. The storage reservoir having total capacity of 5,000 million cubic feet and a useful capacity for navigation purposes of 3,350 million cubic feet also supplies a power station with a capacity of 2,000 kilowatts.
- c) Other reservoirs are in course of construction at Sersno in the Klodnica valley, with a storage capacity of 2,800 million cubic feet; at Weistriz near Breslau (Wroclaw) with a storage capacity of 1,750 million cubic feet. The effect of these reservoirs has been a rise of 1.2 feet on the middle and lower Oder below Breslau.

B) On the upper stretch:

- a) The upper - Silesian Canal (so-called Adolph Hitler canal) completed in 1939 between Gliwice-Kozle is 25 miles in length and has five locks 12-30 feet high. It joins the coal district of Silesia with the river Oder. This modern navigable waterway is accessible by craft of 1,000 - 1,200 tons.

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- b) The upper section of the Oder, between Kozle and Ransern, (below Breslau) is canalized. Twenty-two weirs were built (with a total head of 190 feet) at: Kozle, Januszkowice, Krempa, Krupowice, Rosow, Konty, Groszowice, Opole, Frauendorf, Dobern, Oderhof, Sowade, The Mouth of Missa, Koppen, Brzegi, Linden, Olawa, Rattwitz, Janowice, Ottwitz, Breslau (Wroclaw) Ransern.
- c) General data regarding the canalized section of the river Oder are given in the following table:
- | | |
|-------------------------------------|--------------------|
| 1. Length of the canalized section: | 105 miles |
| 2. Number of falls | 22 |
| 3. Total fall | 190 feet |
| 4. Average length of the reaches | 4.8 miles |
| 5. Minimum depth for shipping: | |
| a) at low water level | 5 feet |
| b) at medium water level | 7.6 feet |
| 6. Authorized draught of the boats: | 4.6 feet |
| 7. Width of the weir openings: | 216-376 feet |
| 8. Number of water power stations: | 8 |
| 9. Water volume of power stations: | 316-360 cubic feet |

11. Bank Stabilization works:

The banks are stabilized almost along the whole stretch of the river Oder.

12. Fordability

There are sand banks mostly on the straight stretches (transit points).

13. Bridges

Ratibor (Raciborz), Kozle, Oppel (Opole), Breslau (Wroclaw), Glogau (Glogow), Grünberg-Zölllichau, Frankfurt, Kurstin, Stettin (this list is not complete).

14. Navigable Reaches, and Port Improvement.

From Kozle to Stettin. Ports: Kozle, Opole, Breslau, Frankfurt, Stettin.

15. Aids to navigation

The waterway is equipped with buoys, lights and channel markers.

16. Interruption factors

The surplus water from the reservoirs in the upper basin increase the navigation depth by one and a half feet.

17. Statistics

- a) Goods traffic on the River Oder in 1938 amounted to about 10 million tons.

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- b) Number of non self-propelled craft in 1938:
Total - 2,493 with a capacity of 917,222 tons.
 166 of which had a capacity of 601-1000 tons.
 1,612 of which had a capacity of 251 - 600 tons.
 647 of which had a capacity of 51 - 250 tons.
 67 of which had a capacity of 21 - 50 tons.
- c) Number of tugs in 1938: 343 with a power capacity of 60,978 horse power.
- d) Number of self-propelled craft:
 55 with a capacity of 11,166 tons and a power capacity
 of 5,918 horse power.
- e) Passenger boats and passenger and cargo boats:
1. Passenger boats: A total of 30 with 973 tons capacity
 and 2,174 horse power.
 2. Passenger and Cargo Boats: A total of 12 with 606 tons
 capacity and 1,562 horse power.

NOTE: These figures changed considerably during World War II and the total number of barges, tugs and other boats probably increased from about 3000 to about 8000, then considerably decreased at the end of World War II.

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